

1 TITLE OF THE INVENTION

2 PERSONALIZED ANIMATION BY SELECTIVE REFLECTION

3 RELATED APPLICATION

4 Provisional application 60/18958, filed March 15, 2000, from which priority
5 is claimed .

6 FIELD OF THE INVENTION

7 The invention concerns the production of a personalized animated effect
8 by selected reflections of related objects in sequential positions from respective
9 different faces of a prism or other mutually inclined reflective surfaces. More,
10 particularly, the invention concerns the provision of an amusing animation of a
11 personal photo.

12 BACKGROUND OF THE INVENTION

13 It is known to provide animated or motion picture effects by overlaying a
14 lenticular screen formed by a large number of minute lenticules on pictures or
15 displays composed of a large numbers of alternately different image elements
16 selectively visible through the lenticular screen when viewed at different angles.
17 Examples of such prior art are disclosed in U.S. 3,268,239 issued 1966 to
18 Finkel; U.S. 2,832,593 issued 1964; and U.S. 3,119,195 issued to Braunhut.
19 Another display for obtaining a changeable picture by multiple reflections is
20 taught in U.S. 3,586,592 issued 1968 to Cahn.

21 However, these particular forms of displays, (sometimes known as
22 parallax panoramograms), and referred to in the Finkel patent as "animation
23 displays" can be relatively difficult and time consuming to make.

24 U.S. 4,593,876 issued 1986 to Greiner teaches a picture stand employing
25 a frame and two prisms to display four different pictures of which only two are
26 visible at a time depending on the angle of view.

1 SUMMARY OF THE INVENTION

2 It is an object of the invention to provide an amusing personalized
3 animated effect by selected reflections of the same or related objects in
4 sequential positions from respective different faces of a single prism.

5 More specifically, first and second half objects (or first and second related
6 objects), in respective different sequential positions are aligned behind
7 respective adjacent, first and second, inclined faces of an optical prism so that,
8 when viewed at different angles alternately through a front face of the prism,
9 images of the first and second half objects, (or of the first and second related
10 objects), are seen alternatively by transmission and total internal reflection at
11 alternate faces so that they combine to form completed whole images of the first
12 and second objects alternatively, thereby providing an impression to the viewer
13 of animation by object movement.

14 In other words, when viewed through the front face at a first angle, an
15 image of the first half object aligned behind the first face will be seen by direct
16 transmission through the first rear and front faces and will combine with a mirror
17 image of the first half object seen by transmission through the first face, total
18 internal reflection at the second face and, transmission through the front face to
19 provide a composite image apparently of the whole first object and, when viewed
20 through the front face at a second angle, an image of the second half object
21 aligned behind the second face will be seen by direct transmission through the
22 rear and front faces and will combine with a mirror image of the second half
23 object seen by transmission through the rear face, total internal reflection at the
24 first face and transmission through the front face to provide a composite image
25 apparently of the whole second object.

26 The first and second half objects may, respectively, be pictures of half of a
27 same or similar face or person having respective different expressions producing
28 a changing expression or hands producing a clapping effect. Written message
29 portions may be associated with respective half objects to form or complete a

1 slogan or message when viewed at alternate angles. The optical prism may be
2 constituted by any suitable refractive material such as glass, plastic or a
3 container of liquid such as water.

4 As a result of the relative simplicity of construction, the principle of the
5 invention may be readily embodied in many commonly used articles such as
6 picture frames, domestic utensils or personal accessories/apparel. Forming the
7 pictures from personal photographs personalization of a variety of commonly
8 used articles.

9 The invention also provides A kit for making an amusement device
10 providing an animated display of a person's photo comprising:

11 means for providing an optical prism having a front, optical face and first
12 and second, inclined rear faces;

13 a first picture of a first half of a character's body in a first position and a
14 second picture, of a complementary half of the character's body in a second
15 position, sequentially different from the first position;

16 the first picture and the second picture defining adjacent areas on the
17 respective character's body halves for mounting a photo of a person's face;

18 means for holding the optical prism with said first picture and a first half of
19 said photo mounted thereon showing a first half of the person's face aligned
20 behind said first rear face and with said second picture mounting a second half
21 of said photo mounted thereon showing a second half of the person's face
22 aligned behind said second rear face,

23 so that, when viewed through the front face at a first angle, a image of the
24 first picture and first half of the person's face will be seen by direct transmission
25 through the first rear face and the front face and a mirror image of the first
26 picture and first half of the person's face will be seen by direct transmission
27 through the first rear face, total internal reflection at the second rear face and
28 subsequent transmission through the front face so that the direct and mirror
29 images combine to provide a completed image, apparently of the character's
30 whole body in the first position with apparently the person's whole face thereon

1 and, when viewed through the front face at a second angle, an image of the
2 second picture and second half of the person's face will be seen by direct
3 transmission through the second rear face and front face and a mirror image of
4 the second picture and second half of the person's face will be seen by
5 transmission through the second rear face, total internal reflection at the first rear
6 face and subsequent transmission through the front face so that the direct and
7 mirror images combine to provide a completed image apparently of the
8 character's whole body in the second position with apparently the person's
9 whole face thereon,

10 whereby a spectator looking through a front face of the prism and rapidly
11 switching between different angles sees apparently whole images of the
12 character's body mounted with the persons face in the first position and in the
13 second position alternatively, thereby providing an amusing impression of
14 personalized animation.

15 The first picture and the second picture can be on a single sheet adjoining
16 a central vertical axis dividing the sheet into left and right halves, respectively,
17 and formed with a fold line for folding the sheet about the central vertical axis for
18 location with left and right halves aligned, respectively, behind adjacent rear
19 faces of the prism so that the central vertical axis is aligned with the intersection
20 of the first and second rear faces of the prism. The holding means may comprise
21 a picture frame surrounding the front face of the prism and having means for
22 securing the first and second pictures in alignment with the respective rear faces
23 of the prism. The means for providing the optical prism may comprise a clear
24 walled prismatic shaped container for holding water.

25 The first and said second photos respectively may comprise a whole face
26 or complementary half faces having respectively different expressions or any
27 picture of any face cut from a personal photo or magazine picture of a famous
28 personality. In either case, the size of the whole face need not match precisely
29 the size of the background body on which it is mounted. In fact, a very small
30 head on a big body or a big head on a small body can be extremely amusing.

1 This facilitates use and marketability of the kit as there is no need for the user to
2 search for a picture of a precisely matching size.

3 The character body may be human, animal or robotic possibly well known
4 in the entertainment field, cartoon or real life personalities.

5 6 BRIEF DESCRIPTION OF THE DRAWINGS

7 Embodiments of the invention are shown by way of example only in the
8 accompanying drawings in which:

9 Figures 1a and 1b are schematic front views of a card gimmick, before
10 and after folding, respectively;

11 Figures 2a, 2b and 2c are diagrammatic front perspective views of a
12 stationary optical prism behind which the folded card of Figure 1b is mounted
13 showing the different composite images seen when the card is viewed through
14 the front face of the prism from respectively different angles;

15 Figures 3a and 3b are diagrammatic front perspective views of the optical
16 prism of Figure 2a showing the different card images obtained when the prism is
17 set at respectively different angles;

18 Figure 3c is a diagrammatic front perspective view of the optical prism of
19 Figure 2a showing the impression of animation when the prism is rocked
20 between the different angles;

21 Figures 4a, 4b and 4c are schematic front views of alternative card
22 gimmicks of a weight lifter, human face and human figure with respective first
23 and second half objects in sequential positions of movement;

24 Figure 5 is a perspective view of a key-chain frame containing a prism
25 carrying photographs showing two different expressions of (half) a face;

26 Figures 6 is a perspective view of a picture frame with a prism carrying
27 two different action shots of the same subject ;

28 Figure 7 is a perspective view of a clear cotton jar or other container with
29 a solid prism shaped container for water at a front, adjacent rear faces of which
30 are respectively marked with half faces with respectively different expressions;

1 Figure 8 is a perspective view of a drinking glass holder having two optical
2 prisms at a front face with respective adjacent rear faces each carrying half faces
3 with different expressions;

4 Figure 9 is a perspective view of a drinking mug containing a prism with a
5 front, viewing face outermost and rear adjacent faces marked with half faces
6 with different expressions;

7 Figure 10 is a perspective view of a drinking glass having one wall portion
8 formed by a prism with half faces with different expressions marked on
9 outermost adjacent rear walls of the prism for viewing through a front face behind
10 a beverage contained liquid;

11 Figure 11a is a perspective view of a soap/lotion dispenser incorporating a
12 liquid optical prism with different background illustrations on rear adjacent faces.

13 Figure 11b is a perspective view of another embodiment of soap/lotion
14 dispenser incorporating a liquid optical prism with different background
15 illustrations on rear faces.

16 Figure 12 is a perspective view of a mirror with tall prisms mounted at
17 opposite ends with half faces having respective adjacent rear faces marked with
18 half faces with different expressions;

19 Figure 13 is a perspective view of a toothbrush with handle formed by an
20 optical prism with adjacent rear faces marked with half faces having different
21 expressions;

22 Figure 14 is a perspective view of another drinking glass integrally formed
23 with a solid prism positioned with the major face outward;

24 Figure 15 is a perspective view of a toothbrush holder having a front face
25 formed by front major surfaces of three solid optical prisms;

26 Figure 16 is a perspective view of a soap dish having an upper, soap
27 supporting face formed by front major surfaces of three solid optical prisms; and

28 Figure 17 is a perspective view of an (upper), back of a bristle carrying
29 head of a scrub brush formed by front major surfaces of five solid optical prisms.

PARTICULAR DESCRIPTION

Figures 1a and 1b show a gimmick comprising a card having left half and right halves 1 and 2, respectively, the left half 1 carrying a picture of first half object 3 representing a half of a large face having a smiling expression and the right half 2 carrying a picture of a second half object 4 constituted by half of a smaller face having an astonished or horrified expression. Both half objects have their respective axes of symmetry aligned with the central vertical axis dividing the card into the left and right halves. The card is folded about the central vertical axis as shown in Figure 1b and placed with left and right halves aligned, respectively, behind adjacent faces 6 and 7 so that the central vertical axis is aligned with the intersection of the first and second faces of the prism.

As shown in Figure 2a, when viewed perpendicularly through the front face of the prism 8, images of both half objects 3 and 4 will be seen by direct transmission through rear and front faces.

When viewed from the right side of the front face of the prism, the first half object 3 behind prism face 6 is seen through the front face by direct transmission (through rear and front faces) and a mirror image 3' seen by transmission through the rear face, total internal reflection from adjacent face 7, and transmission through the front face, the images combining form a composite image apparently of a whole smiling face. The typical paths of the direct and reflected light are shown schematically by r1 and r2, ignoring refractive effects at the front face of the prism.

Alternatively, when viewed from the left side of the front face of the prism, an image of the second half object 4 behind prism face 7 is seen through the front face of the prism by direct transmission (through rear and front faces) and a mirror image 4' seen by transmission through the rear face, total internal reflection from adjacent face 6, and transmission through the front face, the images combining to form a composite image apparently of a whole horrified face, as shown in Figure 2c.

The paths of the direct and reflected light are shown schematically by r3

1 and r4, ignoring refractive effects at the front face.

2 Thus, when the angles of viewed are alternated rapidly an impression of
3 animation is obtained exaggerated by the change in the size of the faces.

4 As shown in Figures 3a and 3b, the alternative composite images can be
5 obtained by changing the angular position of the prism and Figure 3c is a
6 schematic simulating the impression of animation obtained by rocking the prism
7 between the two angular positions.

8 As shown in Figure 4a, a background picture shows complementary
9 halves of a character weight lifter's body joined/divided at a central vertical axis
10 with a location F specified for mounting a photo of a person's face, providing
11 amusing weight lifting animation when mounted and viewed through the prism at
12 different angles.

13 Figures 4b and 4c show, respectively, complementary halves of a human
14 face and human figure, the complementary halves of each pair being in different
15 sequential positions of movement, to provide, when suitably mounted and
16 viewed through the prism at different angles amusing animation showing
17 changing facial expression and movement between a standing position with both
18 arms raised and a sitting position with both arms raised lowered.

19 As shown in Figure 5, a key-chain frame 9 holds a glass or plastic prism
20 11 carrying photographs showing two different expressions of (half) a persons
21 face, for example. The respective photographs may be inserted between a rear
22 portion of the frame backing the rear faces of the prism or adhered to the rear
23 faces of the prism.

24 The picture frame 12, shown in Figure 6a, carries two different action
25 shots of the same subject. The frame may be provided with a backing plate
26 enabling the folded picture sheet to be inserted and trapped between the
27 backing plate and the rear adjacent faces of the prism. For economy, the prism
28 may be a prismatic container of clear plastic or glass for filling with water by the
29 purchaser. As shown in Figure 4, a an area/ location may be provided on each
30 picture half to which the picture of a half of a known person face may be

1 attached for a novelty effect. The face size need not match the body size exactly
2 and a noticeably smaller or larger face may enhance the amusing effect.

3 A cotton jar or other container shown in Figure 7 has a prism shaped
4 container 14 for water at a front, adjacent rear faces of which are marked with
5 half faces with different expressions.

6 A drinking glass holder shown in Figure 8, has two prisms or prismatic
7 containers 15 for liquid in side by side relation at a front face, respective adjacent
8 rear faces of respective prisms are each marked with half faces with different
9 expressions.

10 A mug, shown in Figure 9, contains a solid or liquid receiving prismatic
11 liquid receiving compartment 16 having rear adjacent faces marked with half
12 faces with different expressions and a front face formed by a clear front wall of
13 the mug .

14 A drinking glass, shown in Figure 10, has one wall portion formed by a
15 prism 17 with half faces with different expressions marked on adjacent rear walls
16 of the prism. Small smiling faces are also marked on the front, major face of the
17 prism. The prism is located for viewing of the alternating images through
18 contents of the glass.

19 A soap/lotion dispenser, shown in Figure 11, incorporates a liquid prism
20 with different background illustrations on rear adjacent faces and solid plastic
21 fish floating inside the liquid prism. The soap/lotion is stored behind the prism.

22 Figure 11b shows a soap/lotion dispenser incorporating a liquid prism with
23 different background illustrations on rear adjacent faces and solid plastic animal
24 fish floating inside the liquid prism. The soap/lotion is stored below the prism.

25 Figure 12 shows a mirror with stand with opposite ends of a frame
26 carrying tall prisms with half faces having different expressions marked on
27 adjacent rear faces of the prisms.

28 The toothbrush shown in Figure 13 has an optical prism 21 forming a
29 handle. Adjacent rear faces of the prism are marked with half faces having
30 different expressions. The brushing motion produces the rapid changes of

1 viewing angle for an impression of animation.

2 Figure 14 shows a drinking glass integrally formed with a solid prism 22
3 positioned with the major face outward. Illustrations of half stars of different sizes
4 are marked on the rear adjacent faces. An upper side face 23 of the prism is
5 inclined downward as it extends inward to avoid interference with drinking.

6 Figure 15 shows a toothbrush holder having a front face formed by front
7 major surfaces of three solid optical prism portions 24 molded as one piece,
8 machined in one piece from a single block or made separately and fixed together
9 in side by side relation so that interstices 25 between adjacent rear faces
10 cooperate with a back wall to define separate, adjacent toothpaste and
11 toothbrush receiving compartments. Illustrations of half faces with different
12 expressions and half butterflies with wings in different positions are marked on or
13 aligned behind adjacent rear faces of respective prisms.

14 A soap dish shown in Figure 16 has an upper, soap supporting face 26
15 formed by coplanar, contiguous front major surfaces of three solid optical prisms
16 portions 27 molded as one piece, machined in one piece from a single block or
17 made separately and fixed together in side by side relation. Illustrations of half
18 butterflies with wings in different positions are marked on or aligned behind
19 adjacent rear faces of respective prisms.

20 A scrub brush, shown in Figure 17 scrub brush has an (upper), back of a
21 bristle carrying portion face formed by coplanar, contiguous, front major surfaces
22 of five solid optical prisms 29 molded as one piece, cut in one piece from a
23 single block or made separately and fixed together in side by side relation.
24 Illustrations of half faces or shapes in different positions are marked on or
25 aligned behind adjacent rear faces of respective prisms so that viewing from
26 selected different angles alternately provides an animated effect similar to all the
27 prior examples.

28 All of the examples disclosed above can be made from transparent/clear
29 plastic or glass.